

**Notice of Allowability**

Application No.

10/620,873

Applicant(s)

AKIMOTO ET AL.

Examiner

Sath V. Perungavoor

Art Unit

2624

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_.
2. ☒ The allowed claim(s) is/are 1.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20070221</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date <u>2/15/07</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material                  | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|   | 9. <input type="checkbox"/> Other ____.  |

### **EXAMINER'S AMENDMENT**

- [1] An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
- [2] Authorization for this examiner's amendment was given in a telephone interview with David Garrison (Reg. No. 24,298) on February 21, 2007.
- [3] The application has been amended as follows:

#### **In the Title of the Invention**

Please amend the title as follows:

METHOD, APPARATUS AND SYSTEM FOR COMPRESSING STILL IMAGES IN  
MULTIPURPOSE COMPRESSION SYSTEMS

#### **In Claim 1**

In claim 1, last line of step f, after "block having" and before "frequencies across", please replace " low" with "high".

### **REASONS FOR ALLOWANCE**

- [4] The following is an examiner's statement of reasons for allowance: The instant invention is a compression method.

Following prior arts were found:

Raffy et al. ("Raffy") [US 7,002,627].

Gillard et al. ("Gillard") [US 5,329,360].

Ville et al. ("Ville") [US 7,177,478].

In the independent claim, prior art was found for the claim limitations as follows:

A method for compressing electronically stored still images in a multi purpose compression system comprising the step of [Gillard: fig. 1]: a. selecting the image to be compressed [Raffy: output of 10; fig. 1]; b. converting any selected image that is in the RGB format into the YUV 4:4:4 format [Raffy: output of 15; fig. 1]; c. converting images in the YUV 4:4:4 format into the YUV 4:2:0 format [Raffy: output of 11'; fig. 1] d. combining the U and V color planes [Gillard: col. 11, ll. 10-16]; e. executing a one-dimensional discrete wavelet transform for every line of the Y plane such that two blocks with multiple rows and columns are formed wherein one block contains low frequencies (*i.e.* LF) and the other block contains high frequencies (*i.e.* HF) [Gillard: fig. 4 and 7]; f. executing a one-dimensional discrete wavelet transform for every line of the plane obtained after the preceding step such that the blocks in the obtained frame are further divided into two blocks with multiple rows and columns, wherein the block containing low frequencies is divided into an LL (*i.e.* LF-LF) block having low frequencies across and up and an LH (*i.e.* LF-HF) block having low frequencies across and high frequencies up, and the block containing high frequencies is divided into an HH block having high frequencies across and up (*i.e.* HF-HF) and an HL block having high frequencies across and low frequencies up (*i.e.* HF-LF) [Gillard: fig. 4]; g. executing steps e and f for the obtained LL block and for each subsequent LL block four more such that the resulting plane contains sixteen variously sized blocks

[Gillard: col. 8, ll. 44-48]; h. numbering the blocks in the resulting plane according to a pre-determined numbering scheme [Gillard: fig. 7; col. 8, ll. 49-55]; i. repeating steps e through h for the UV plane [Gillard: fig. 8]; j. selecting a filter from a library of possible filters wherein the filter selection is based on the image dimensions and the coding format [Gillard: col. 8, ll. 10-25; col. 10, ll. 53-62]; k. executing vertical and horizontal filtering passes on the blocks in the transformed Y and UV planes according to a pre-determined filtering scheme to obtain the frequency coefficient for each element in the transformed planes [Gillard: col. 8, ll. 40-42]; l. quantizing the frequency coefficients and recording the quantized values into a one-dimensional array [Gillard: col. 6, ll. 60-65]; m. quantizing the one-dimensional array by modified run length encoding such that a data array and a length array are obtained [Ville: col. 4, ll. 4-9]; n. replacing the values in the data array with a corresponding value in a pre-designated library of corresponding values wherein if no corresponding value exists in the library for an element in the data array, a one element shift is executed and the library is rechecked for a corresponding value [Ville: col. 4, ll. 10-15]; q. encoding the length array and the data array using entropy encoding methods [Ville: col. 4, ll. 58-67]; and whereby the image can be restored by reversing the steps a through q above.

Applicant uniquely claimed a distinct feature in the instant invention, which are not found in the prior art, either singularly or in combination. The feature is

- o. recording the relative displacement of elements in the length array having a value higher than a pre-determined number to an additional array called the shift array;
- p. writing the shift array to the end of the length array;

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This feature is not found or suggested in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

[5] Claims 1 is allowed.

### ***Contact Information***

[6] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Dated: February 21, 2007

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